



1/24/90

Costing Information for Versar

I. Offsite Incineration

A. Bulk LWD, Inc. in Calvert
City, Kentucky
\$1000 cy out on

B. SCA Incinerator need
packaging of waste
\$1.00 yb

Transportation costs are \$4.00/mile
and 20 cy per truck

II. On-site Incineration (see literature)

Can process 10-12 tons/hour or
150 cy/day

Cost \$300 cy

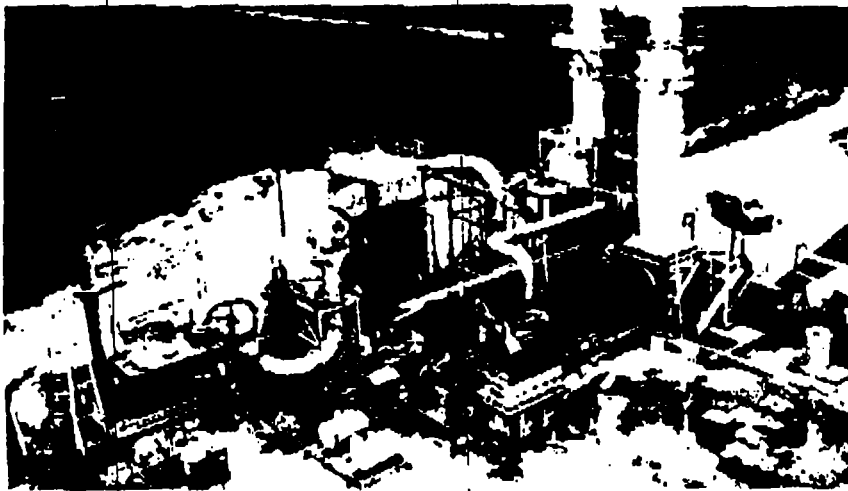
\$150,000 for test burn

\$500,000 for mobil and demobil

Unit comes in 26? trailers.

Run time is about 60-70 %.





PROJECT: Incineration
of PCB Contaminated
Soil

CLIENT: Illinois
Environmental
Protection Agency

SITE: Lauder Salvage
Yard Beardstown, IL

Project Description

Soil contaminated with PCB's ranging up to 120,000 ppm were found in an abandoned salvage yard near Beardstown, Illinois. Current and past owners were unable to pay the costs of cleanup or could not be located and it was determined that state funds would have to be used. The Illinois EPA selected incineration as the preferred technology for site remediation. Destruction of the PCB's was preferred to merely moving the contaminated soil to another landfill and suffering future unknown consequences.

WESTON was contracted by the Illinois EPA to excavate and incinerate the contaminated soil and provide a complete turnkey service using the Transportable Incinerator System (TIS).

WESTON Scope of Work

- Incineration System Design
- Development of Detailed Test and Safety Plans
- Community Relations including Computer Access Allowing Concerned Citizens to Monitor Operations
- Environmental Permitting including National TSCA Permit, Illinois Land Pollution Control Permit, and a Construction and Operating Permit from the Division of Air Pollution Control
- Performance of Trial Burn Testing and Analysis
- Soil Excavation, Screening and Stockpiling
- Turn Key Operation of the TIS
- Site Closure

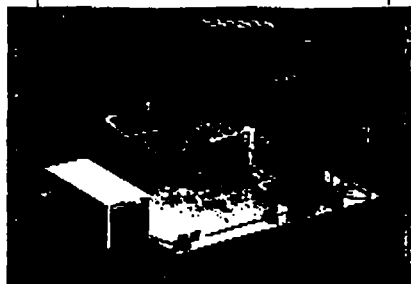
Results

- Over 7,500 Tons of PCB Contaminated Soil were Successfully Processed
- Destruction and Removal Efficiency for PCB's was 99.99999%
- HCl Emissions were Less Than 3 Lbs/Hr
- Particulate Emissions were Less Than 0.04 Lbs/Hr
- Carbon Monoxide Emissions were Less Than 10 ppm
- Total Hydrocarbon Emissions were Less Than 10 ppm
- No Significant Emissions of Dioxins or Furans



Project Summary

TRANSPORTABLE THERMAL TREATMENT SYSTEMS



Weston Services, Inc. (WSI), a wholly-owned subsidiary of Roy F. Weston, Inc., is a premier firm in the field of waste management and remediation. In the last five years, WESTON has pioneered the development, design, permitting, construction, performance testing, and operation of hazardous waste thermal treatment systems.

The demand for proven transportable thermal treatment systems is increasing. WSI has already designed and constructed two transportable thermal treatment systems, and now offers these systems for hazardous waste remedial action projects. A transportable rotary kiln incineration system, the first of these systems, is currently in operation at a PCB-contaminated site in Illinois. The second system, a mobile low temperature thermal treatment system, has been constructed and will be used to clean up gasoline-contaminated soils from leaking underground storage tanks in California.



TRANSPORTABLE INCINERATION SYSTEM (TIS)

The Transportable Incineration System is comprised of the following major components:

- Rotary kiln (7' 6" diameter x 25' length)
- Afterburner (8' 0" diameter x 33' height)
- Heat recovery system to preheat combustion air
- Fabric filter for particulate emissions control
- Packed tower scrubber for acid gas emissions control

The TIS is capable of treating liquid and/or solid hazardous wastes. The processing rate will be dependent upon the characteristics of the waste. The design process rate is 6 tons/hour of contaminated soils. The rotary kiln operates between 1200°F and 2200°F, and the afterburner is designed to provide a minimum gas residence time of two seconds at greater than 2200°F. The system is completely computerized with remote data recovery by modem. It includes a Continuous Emission Monitoring (CEM) system which provides stack emission data to the central computer unit.

In July of 1987, WESTON was granted a National Toxic Substances Control Act (TSCA) permit for the TIS. After the trial burn results are reviewed and approved, this system will be one of the first full-scale transportable incineration systems with a National TSCA permit which will allow incineration of PCB-contaminated soils (up to 10,000 ppm) in any of the ten U.S. EPA Regions.

MOBILE LOW TEMPERATURE THERMAL TREATMENT (LT³) SYSTEM

WESTON's LT³ system (patent pending) is designed for stripping volatile organic compounds (VOCs) from soils. The heart of the system is a heated screw conveyor (indirectly heated by hot oil circulating through the shaft and flights) which heats the contaminated soil to 400-450°F to vaporize the moisture and VOCs. The clean soil is then suitable for use on-site as backfill. The vaporized contaminants are treated as follows:

- Offgas passes through a fabric filter for particulate emissions control.
- Filtered offgas passes through a condenser to remove condensible moisture and organics.
- Noncondensibles are incinerated in an afterburner at 1800°F for a minimum of two seconds.
- Condensate passes through a two-stage carbon filtration system for final VOC removal.
- Clean filtered water is used for processed soil cooling and/or dust control (i.e., no liquid discharges).

The mobile LT³ system is mounted on three truck trailers (one 35' long and two 42' long). These trailers are designed to fit within a site area of 25' wide by 65' long. The system includes a feed material screening system and standard dump trucks for processed soil collection and transportation. The design process rate is 15,000 lbs/hr of contaminated soil (assuming 20% soil moisture content and 10,000 ppm VOC concentration).

SCOPE OF SERVICES

WESTON/WSI has proven capabilities in all aspects of transportable thermal treatment, including:

- Feasibility Studies for Thermal Process Systems
- Thermal System Process Design
- Development of New and Innovative Technology
- Equipment Specification, Fabrication, and Delivery
- Equipment Erection and Start-up Services
- System Retrofit and Optimization
- Environmental Permitting
- Community Relations/Expert Testimony
- Trial Burn Testing and Performance Evaluation
- Turnkey Design/Construction/Operation

FOR FURTHER INFORMATION



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Table 8-1
Summary of Directly Related Corporate Experience

Name of Project/ Contract No.	Project Location	Client/ Contact	Project Cost	Percent Completed	How Project Directly Relates to Proposal
Incineration of PCB Contaminated Soil	Lauder Salvage Yard Beardstown, IL	Illinois EPA Jim Janesen (217) 782-6761	\$2,900,000	100%	WESTON provided complete turnkey services using the Transportable Incineration System (TIS). This project demonstrates our capability to treat PCBs.
Incineration of Explosives Contaminated Soil DAAK 11-82-C-0017 (Task Order 2)	Savanna Army Depot Savanna, IL	USATHAMA Wayne Sisk (301) 671-2466	\$ 760,860	100%	WESTON provided complete turnkey services using the Transportable Incineration System (TIS).
Incinerator Feed System for Explosives Contaminated Soil DAAK 11-82-C-0017 (Task Order 9)	Louisiana Army Ammunition Plant Shreveport, LA	USATHAMA Wayne Sisk (301) 671-2466	\$ 447,437	100%	Materials handling and TIS feed system are critical to the success of the TIS. This project demonstrates WESTON's unique experience in this area.
LTS for Petroleum Contaminated Soil	Department of Revenue Bldg. Springfield, IL	Ill. Capital Dev. Board Jim Frank (IEPA) (217) 782-6411	\$ 85,000	100%	WESTON provided complete turnkey services using the mobile Low Temperature Thermal Treatment System. This project demonstrates the diversity of WESTON's experience
LTS for VOC Contaminated Soil DAAK 11-82-C0017 (Task Order 11)	Letterkenny Army Depot Chambersburg, PA	USATHAMA Wayne Sisk (301) 671-2466	\$1,050,900	100%	WESTON provided complete turnkey services using the mobile Low Temperature Thermal Treatment System.
Permitting and Trial Burn Testing for a Hazardous Waste Incinerator	Lauder Salvage Yard Beardstown, IL	Illinois EPA Jim Janesen (217) 782-6761	\$ 215,000	100%	WESTON performed all permitting, trial burn testing, and analytical services for this contract. WESTON was successful in obtaining one of the first National TSCA permits for a full-scale TIS.
Permitting and Trial Burn Testing for a Hazardous Waste Incinerator	Bridgeport, NJ	Hollins Environmental Services, Inc. Tim Forden (302) 479-3429	\$ 200,000	100%	WESTON performed all permitting, trial burn testing, and analytical services for this contract. WESTON was successful in obtaining one of the first approved RCRA Part B Permit Applications in the State of New Jersey.